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1921/22



CATALOGUE OF THE
SCHOOL OF
PUBLIC HEALTH



VOLUME VII

JUNE, 1921

NUMBER 1

HARVARD UNIVERSITY
AND THE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

CATALOGUE
AND
ANNOUNCEMENT

1921-22

PUBLISHED BY THE
HARVARD-TECHNOLOGY
SCHOOL OF PUBLIC HEALTH

240 LONGWOOD AVENUE, BOSTON, MASS.

1921

SCHOOL OF PUBLIC HEALTH
OF
HARVARD UNIVERSITY
AND THE
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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1921

1921

| JULY | | | | | | |
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1922

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CALENDAR

HARVARD UNIVERSITY

1921

Sept. 26, Mon. ACADEMIC YEAR BEGINS in all departments of the University.

RECESS FROM DECEMBER 23 TO JANUARY 2, INCLUSIVE

1922

Feb. 1, Wed. Second half-year begins in the Medical School.

RECESS FROM APRIL 16 TO APRIL 22, INCLUSIVE

June 1, Thurs. Examinations begin in the Medical School.

June 22, Thurs. COMMENCEMENT.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

1921

Oct. 3, Mon. FIRST TERM BEGINS.

Dec. 16-22 Semi-annual Examinations.

Dec. 23 to Jan. 2 Christmas vacation.

1922

Jan. 3, Tues. SECOND TERM BEGINS.

RECESS FROM MARCH 12 TO MARCH 19, INCLUSIVE

Mar. 20, Mon. THIRD TERM BEGINS.

May 29, Mon. Last exercises of third term.

May 31 to June 12 Annual Examinations.

June 9, Fri. COMMENCEMENT.

EXERCISES ARE SUSPENDED ON LEGAL HOLIDAYS

THE SCHOOL OF PUBLIC HEALTH
HARVARD UNIVERSITY AND THE MASSACHUSETTS
INSTITUTE OF TECHNOLOGY

ABBOTT LAWRENCE LOWELL, LL.D., Ph.D., *President of Harvard University.*

ERNEST FOX NICHOLS, Ph.D., Sc.D., LL.D., *President of the Massachusetts Institute of Technology.*

The names of the Administrative Officers and Governing Boards of Harvard University will be found in the Official Register of Harvard University; and of the Administrative Officers and Governing Boards of the Massachusetts Institute of Technology, in the Official Bulletin of the Massachusetts Institute of Technology.

MILTON J. ROSENAU, M.D., A.M., *Director.*

ADMINISTRATIVE BOARD

MILTON J. ROSENAU, M.D., A.M., *Director, and Acting Chairman.*

GEORGE C. WHIPPLE, S.B., *Secretary.*

CLAIR E. TURNER, A.M., C.P.H., *Acting.*

OFFICES

The office of the School of Public Health is at the office of the Director, Professor ROSENAU, Harvard Medical School, Building E, Room 238, 240 Longwood Avenue, Boston, where the business of the School is conducted.

The office of the Secretary, Professor WHIPPLE, who is also acting as Treasurer, is at Room 112, Pierce Hall, Oxford Street, Cambridge.

The office of the Assistant Secretary, Mr. PRATT, is at Building E, Room 328, Harvard Medical School, 240 Longwood Avenue, Boston.

OFFICERS OF INSTRUCTION AND LECTURERS

(Arranged alphabetically)

ROBERT P. BIGELOW, S.B., Ph.D., *Associate Professor of Zoölogy and Parasitology, Massachusetts Institute of Technology.*

JACQUES BRONFENBRENNER, Ph.D., Dr. P.H., *Assistant Professor of Preventive Medicine and Hygiene, Harvard University.*

RICHARD C. CABOT, A.B., M.D., *Professor of Clinical Medicine, Harvard University.*

IDA CANNON, *Head Worker, Social Service Department, Massachusetts General Hospital.*

WALTER B. CANNON, A.M., M.D., *George Higginson Professor of Physiology, Harvard University.*

CHARLES V. CHAPIN, M.D., S.D., *Superintendent of Health, Providence, R. I.*

CECIL K. DRINKER, M.D., *Associate Professor of Applied Physiology, Harvard University.*

DAVID L. EDSALL, A.M., M.D., S.D., *Jackson Professor of Clinical Medicine, and Dean of the Harvard Medical School.*

HAROLD C. ERNST, M.D., A.M., *Professor of Bacteriology, Harvard University.*

WALTER E. FERNALD, A.B., M.D., *Superintendent, Massachusetts School for the Feeble-Minded.*

OTTO FOLIN, S.B., Ph.D., *Hamilton Kuhn Professor of Biological Chemistry, Harvard University.*

ALICE HAMILTON, M.D., *Assistant Professor of Industrial Medicine, Harvard University.*

JOHN B. HAWES, 2d, A.B., M.D., *Secretary, Board of Trustees, Massachusetts Hospital for Consumptives.*

MURRAY P. HORWOOD, S.B., Ph.D., *Instructor in Bacteriology and Public Health, Massachusetts Institute of Technology.*

EUGENE R. KELLEY, M.D., *Commissioner of Health, Massachusetts State Department of Public Health.*

ROBERT W. LAMSON, S.B., A.M., *Assistant in Preventive Medicine and Hygiene, Harvard University.*

ROBERT W. LOVETT, A.B., M.D., *John B. and Buckminster Brown Professor of Orthopedic Surgery, Harvard University.*

GEORGE B. MAGRATH, M.D., *Medical Examiner of Suffolk County.*

JOHN L. MORSE, A.M., M.D., *Professor of Pediatrics, Harvard University.*

WILLIAM L. MOSS, M.D., *Assistant Professor of Preventive Medicine and Hygiene, Harvard University.*

EDWARD MUELLER, Ph.D., *Assistant Professor of Inorganic Chemistry, Massachusetts Institute of Technology.*

EDWIN H. PLACE, M.D., *Assistant Professor of Pediatrics, Harvard University, and Physician-in-Chief, South Department, Boston City Hospital.*

WILLIAM H. POTTER, D.M.D., *Professor of Operative Dentistry, Harvard University.*

AARON P. PRATT, A.B., C.P.H., *Instructor in Public Health Administration; Assistant Secretary, School of Public Health.*

SAMUEL C. PRESCOTT, S.B., *Professor of Industrial Microbiology, Massachusetts Institute of Technology.*

MILTON J. ROSENAU, M.D., A.M., *Professor of Preventive Medicine and Hygiene, Harvard University.*

M. VICTOR SAFFORD, M.D., *Epidemiologist, Boston Board of Health.*

A. WATSON SELLARDS, A.M., M.D., *Assistant Professor of Tropical Medicine, Harvard University.*

FRANCIS H. SLACK, M.D., *Instructor in Public Health Laboratory Methods, Massachusetts Institute of Technology.*

PERCY G. STILES, S.B., Ph.D., *Instructor in Physiology, Harvard University and Radcliffe College.*

RICHARD P. STRONG, Ph.B., M.D., S.D., *Professor of Tropical Medicine, Harvard University.*

CLAIR E. TURNER, A.M., C.P.H., *Assistant Professor of Biology and Public Health, Massachusetts Institute of Technology.*

ERNEST E. TYZZER, M.D., *George Fabyan Professor of Comparative Pathology, Harvard University.*

FREDERICK H. VERHOEFF, A.M., M.D., *Assistant Professor of Ophthalmic Research, Harvard University.*

EUGENE WAMBAUGH, A.M., LL.B., LL.D., *Langdell Professor of Law, Harvard University.*

GEORGE C. WHIPPLE, S.B., *Gordon McKay Professor of Sanitary Engineering, Harvard University.*

MELVILLE C. WHIPPLE, *Instructor in Sanitary Chemistry, Harvard University.*

BENJAMIN WHITE, PH.D., *Director, Division of Biological Laboratories, Massachusetts State Department of Public Health.*

S. BURT WOLBACH, M.D., *Associate Professor of Bacteriology, Harvard University.*

ALPHEUS G. WOODMAN, S.B., *Associate Professor of the Chemistry of Foods, Massachusetts Institute of Technology.*

WILLIAM C. WOODWARD, M.D., LL.M., *Health Commissioner, City of Boston.*

WADE WRIGHT, M.D., *Instructor in Industrial Medicine.*

A complete list of Officers of Instruction and Lecturers in Courses in Industrial Hygiene, in the School of Public Health, will be found in the Catalogue of Industrial Hygiene.

GENERAL INFORMATION

The School of Public Health is conducted by Harvard University and the Massachusetts Institute of Technology through an Administrative Board appointed for this purpose by both institutions.

The principal object of the School is to prepare young men and women for public health work and especially to fit them to occupy administrative, executive, or laboratory positions, as health officials, or as members of boards of health, or secretaries, agents, laboratory workers, or inspectors of health organizations. To this end, lectures, laboratory work, and other forms of instruction are offered by both institutions, and by special instructors from national, state, and local health agencies. The subjects embraced in the courses of study have been selected to cover a wide range, including medical, biological, sanitary, hygienic and engineering sciences, together with practical public health administration and research.

It is recognized that the requirements for public health service are broad and varied, and that the country needs leaders in every community fitted to guide and instruct the people in the art of hygienic living, qualified to direct the expenditure of energy, time, and money in public health work into fruitful channels, and able to initiate plans to meet novel conditions as they arise. It is the object of the School of Public Health to provide the scientific ground work of expert knowledge which underlies efficient health administration, together with some actual personal acquaintance with the theory and practice of modern public health service of the best types.

Harvard University with its extensive resources affords ample opportunities for students to prepare themselves in the medical aspects of public health work and the important subjects of vital statistics and demography. The Massachusetts Institute of Technology, with its courses in municipal sanitation, bacteriology, and public health, presents the engineering and laboratory phases. The courses in Industrial Hygiene offered by the Harvard Medical School are open to students registered in the School of Public Health.

The Harvard Engineering School furnishes instruction in Sanitary Engineering. Special courses in Water Works Engineering, Sewerage Engineering, Water Purification and Sewerage Treatment are also open to properly qualified students. Details of these courses may be found in the catalogue of the Harvard Engineering School. The State of Massachusetts and the City of Boston afford unusual opportunities to study the operation and administration of state and municipal depart-

ments of health, including hygienic laboratory work. In connection with the port of Boston the United States Public Health Service maintains a Marine Quarantine, Immigration, and Medical Service. The School of Public Health is thus in a unique position in being able to offer all of these and many other special opportunities for public health practice.

REQUIREMENTS FOR ADMISSION

Students are admitted to the School of Public Health with various degrees of preliminary training. The time which may be required to obtain the Certificate in Public Health will be largely dependent upon the preliminary training of the applicant. Students with a medical degree require at least one year in residence. Other students as a rule will require two or more years.

Students are admitted to the School if they have satisfactorily completed two years of work in a recognized medical school, or if they have received a bachelor's degree from a recognized college or technical school, or if they have had special experience in public health work, provided they have pursued satisfactory courses in physics, chemistry, biology, and modern languages and the fundamental medical sciences.

The medical degree is not a prerequisite for the Certificate in Public Health, but candidates are advised to obtain the medical degree if possible before specializing in public health work. Experience teaches that at present preferment for employment and advancement to the higher positions come more readily to those who possess medical degrees.

Special students, not candidates for the Certificate in Public Health, who desire to fit themselves for some particular field will be admitted to the School, and may take any course or courses for which they are qualified, on approval of the Administrative Board.

ADMISSION OF WOMEN

Women are admitted to the School of Public Health on the same terms as men, and are equally eligible for the Certificate in Public Health. They are admitted to many of the courses given in the Harvard Graduate School of Medicine and to all courses at the Massachusetts Institute of Technology.

APPLICATION AND REGISTRATION

Application for admission to the School should be made to the Director, and should be accompanied by a full statement of the applicant's qualifications, including his or her academic history together with such certificates from other institutions as the Administrative Board may require.

Each student before being admitted to courses of instruction must register at the office of the Director and obtain a card, to be presented to instructors.

Students in the School of Public Health are registered as students of both Harvard University and the Massachusetts Institute of Technology.

CERTIFICATE

The Certificate in Public Health (C. P. H.) will be granted to candidates * who have satisfactorily completed the studies of their approved schedule, who have spent not less than one academic year in residence, and who have otherwise complied with all requirements. This certificate is issued by Harvard University and the Massachusetts Institute of Technology and signed by the President of each institution and by the members of the Administrative Board.

FEES

The tuition fee for candidates for the Certificate in Public Health and for all other students pursuing regular courses in the School is \$250 per year and must be paid in advance as follows:— \$150 on or before the first day of the first term, and \$100 on or before the first day of the second term. For one-half of the school year the fee is \$150; for one-third of the year, \$90.

Special students who do not pay the regular fee must pay a special fee for each course.

A deposit of \$25 is required against charges for use of materials and breakage in the laboratories, of which any balance remaining at the end of the year will be returned. There are no extra laboratory fees for instruction taken in course.

All fees must be paid to Professor Whipple, Treasurer of the School. Checks should be made payable to the School of Public Health.

* Students who enter the School for the purpose of taking only special studies are not regarded as candidates.

FELLOWSHIPS AND SCHOLARSHIPS

One fellowship of \$500, which carries with it exemption from tuition fees, will be awarded during the year 1921-22 by the Administrative Board of the School. The holder of this fellowship will be expected to devote the greater part of his time to research in some field of public health science.

One fellowship of \$250, made available through the generosity of Mr. James M. Heatherton, of New York City, will be awarded during the year 1921-22 by the Administrative Board of the School. The holder of this fellowship must devote a considerable part of his time to research relating to some branch of plumbing.

One scholarship of \$250, i. e., the equivalent of one year's tuition, will be awarded by the Administrative Board of the School during the year 1921-22.

Applications for fellowships and scholarships should be made to the Director.

DIVISION OF STUDIES

Two programs or schedules of studies are provided in the School, one for students who have previously obtained the medical degree and one for students who have not. All candidates for the Certificate in Public Health must follow one or the other of these schedules, and in addition may take a certain number of elective courses. Students who do not follow one or the other of these schedules will be classified as special students, and will not be considered as candidates for the Certificate in Public Health.

REQUIRED WORK

The schedules of courses, which must be completed by candidates for the C. P. H. are indicated on page 14. In addition to this required work, each student may select courses, known as elective courses, but in no case shall the total number of hours taken exceed *thirty hours a week* except by special vote of the Administrative Board. After such optional courses have been elected the student must complete these courses, and in no case will be allowed to change them without a vote of the Administrative Board.

EXAMINATIONS

Written examinations may be given by the various instructors during or at the end of their particular courses. On the completion of the work of each term every student in the School must also present himself before the members of the Administrative Board for an oral examination on the work just completed. In the case of those students who present themselves for final examination, there will be a general oral examination covering all of the work taken during residence in the School.

RESEARCH PROBLEM

No student will be granted a Certificate in Public Health, who has not during his residence in the School completed a satisfactory thesis. This must be presented to the Administrative Board in due form and must have received the approval of the Board before the final examination will be given. This work may be in the nature of a sanitary survey, a detailed study of some particular problem in public health, or an original piece of laboratory investigation. All subjects must be first approved by the Administrative Board.

SPECIAL LECTURES AND SEMINARS

In addition to the courses already indicated special lectures will be given at various times during the year, in most instances from five to six o'clock. These lectures will require no preparation on the part of the student, but are designed to familiarize him with various fields of activity related to public health work. The lecturers in each instance will be experts, actively engaged in practical work. A list of such lectures will be found on page 23.

Seminars are held by the Director on the second and fourth Thursday evenings of each month throughout the year. At these seminars current literature and original work will be reviewed by members of the instructing staff and by members of the School of Public Health. Such lectures and seminars are a part of the regular work of the School and attendance is expected of all students.

These courses are not reckoned in the total number of hours allowed in selecting courses for the Certificate in Public Health.

ADDITIONAL COURSES

Students may take other courses at Harvard University or at the Massachusetts Institute of Technology, but in all such cases registration must be made through the office of the Director. For additional courses consult catalogues of the two institutions.

SCHEDULE OF COURSES

(For description of courses, see pp. 17 to 22)

HARVARD MEDICAL SCHOOL

FIRST TERM (October–February)

| Course | No. | Subject | Hours per week |
|--------|---|---------|-------------------|
| 111a | Preventive Medicine and Hygiene | | 6 |
| 111c | Evening Journal Club | | .. |
| 114 | Tropical Medicine | | .. |
| 412 | Wasserman Laboratory Work | | 6 |
| 413 | Bacteriology | | 17* |
| 425 | Pathology | | 24 |

SECOND TERM (February–June)

| | | |
|---|---|----|
| • | 111b Preventive Medicine and Hygiene (conference) . | 1 |
| • | 310 Public Health Administration | 2 |
| • | 111c Evening Journal Club | .. |

* Part of term.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

FIRST TERM (October–December)

| Course No. | Subject | Hours per week |
|---------------|---------------------------------|-------------------|
| 415 | Anatomy and Histology | 8 |
| 711 | Municipal Sanitation | 2 |
| 812 | Vital Statistics | 3 |
| 414 | Bacteriology | 6 |
| 613 | Parasitology | 1 |
| 417 | Bio-chemistry | 3 |
| 210 | Personal Hygiene | 3 |

SECOND TERM (January–March)

| | | |
|-----|--|---|
| 210 | Personal Hygiene | 3 |
| 112 | Problems and Practice in Public Health | 3 |
| 211 | Industrial Hygiene | 3 |
| 415 | Anatomy and Histology | 8 |
| 418 | Public Health Laboratory Methods | 6 |
| 419 | Physiology | 6 |
| 420 | Physiological Laboratory | 2 |
| 421 | Food Analysis | 5 |
| 612 | Biology of Disease | 2 |
| 711 | Municipal Sanitation | 2 |
| 414 | Bacteriology | 6 |
| 613 | Parasitology | 1 |
| 426 | Veterinary Bacteriology | 2 |

THIRD TERM (April–June)

| | | |
|-----|--|---|
| 110 | Principles of Sanitary Science and Public Health | 1 |
| 112 | Problems and Practice in Public Health | 3 |
| 415 | Anatomy and Histology | 8 |
| 418 | Public Health Laboratory Methods | 6 |
| 419 | Physiology | 6 |
| 612 | Biology of Disease | 2 |
| 711 | Municipal Sanitation | 2 |
| 414 | Bacteriology | 6 |
| 416 | Analysis of Water, Sewage and Air | 4 |
| 613 | Parasitology | 1 |
| 426 | Veterinary Bacteriology | 2 |

HARVARD UNIVERSITY, CAMBRIDGE

FIRST TERM (October–February)

| Course No. | Subject | Hours per week |
|---------------|--|-------------------|
| 411 | Laboratory Technique | 6 |
| 810 | Vital Statistics | 6 |
| 423 | Sanitary Chemistry and Biology | 9 |
| 710 | Sanitary Engineering | 3 |
| 212 | Industrial Sanitation | 3 |

SECOND TERM (February–June)

| | | |
|-----|-------------------------------------|---|
| 424 | Bacteriology (Elementary) | 9 |
| 710 | Sanitary Engineering | 9 |

COURSES GIVEN AT OTHER PLACES

| | | |
|-----|---|----|
| 312 | Social Service Work at Massachusetts General Hospital | 6 |
| 610 | Communicable Diseases at City Hospital | 3 |
| 611 | Communicable Diseases Internship at Hospital | .. |
| 422 | Hygienic Laboratory Methods at State Antitoxin, Vaccine and Wassermann Laboratory | .. |

DESCRIPTION OF COURSES

The courses are here arranged according to groups. Complete descriptions are given of only those courses which are required or elective. Courses of interest to special students or to regular students having time for extra work are listed by title only. Description of these may be found in the catalogues of the institutions.

PREVENTIVE MEDICINE AND SANITARY SCIENCE

- 110.** *Principles of Sanitary Science and Public Health.* (Required.)

M. I. T. 756, two hours per week, third term. Professors PRESCOTT and TURNER.

A general course dealing briefly with health and disease; ancient and modern theories of disease; parasitism; toxins and antitoxins; theories of vital resistance and immunity; vaccination; epidemiology; and preventive sanitation of water supplies, milk supplies and waste disposal, etc.

- 111a.** *Preventive Medicine and Hygiene.* (Required.)

Harvard Medical School, six hours per week, first term. Professor ROSENAU and assistants.

This is a general course, consisting of lectures, demonstrations, and laboratory work designed to give a bird's-eye view of the important facts and principles in preventive medicine. The subjects covered are those found in Rosenau's "Preventive Medicine and Hygiene." A sanitary survey forms an integral part of this course.

- 111b.** *Preventive Medicine and Hygiene.* (Required.)

Harvard Medical School, one hour per week, second term. Professor ROSENAU.

This is a seminary course given especially for students in the School of Public Health as a supplement to 111a.

- 111c.** A Thursday Evening Journal Club meets at the residence of Professor ROSENAU, on the second and fourth Thursday of each month.

- 112.** *Problems and Practice in Public Health.* (Required.)

M. I. T., two hours per week, second term; three hours per week, third term. Professors PRESCOTT and TURNER.

The course is essentially one in the theory and practice of Hygiene and Sanitation, with discussions of the origin and trend of the underlying principles of sanitary science, public health science and vital statistics.

Special attention is given to current problems of public health science and practice.

114. General Course in Tropical Medicine.

(Offered by the School of Tropical Medicine, and open to students registered in the School of Public Health.)

Given at the Harvard Medical School on dates to be announced.
Professor STRONG and Dr. SELLARDS.

PERSONAL HYGIENE

210. Personal Hygiene. (Required.)

M. I. T., three hours per week, third term.

The course includes a thorough discussion of such topics as the choice of foods, the effects of good and bad air upon the body, muscular activity, fatigue, sleep, rest, recreation, the care of the eyes and other sense organs, bathing and baths, the dangers of sedentary life, and similar subjects bearing upon individual hygiene.

211. Industrial Hygiene. (Optional.)

M. I. T., three hours per week, second term. Professor TURNER and assistants.

The effect of factory life upon health, including occupational accidents, industrial poisonings, and the effects of ventilation and of dusty trades upon the prevalence of tuberculosis and other diseases.

212. Industrial Sanitation. (Required.)

Harvard University, Cambridge, three hours per week, first term. Professor WHIPPLE and assistants.

During 1921-22 this course will be confined to such subjects as the quality of water, distribution of water, plumbing, sewerage and sewage disposal for industrial plants.

PUBLIC HEALTH ADMINISTRATION

310. Public Health Administration. (Required.)

Harvard Medical School, two hours per week, second term. Mr. PRATT and others.

Lectures given on the administrative control of the various communicable diseases, as well as public health field work. Organization of Federal, State, and Municipal Departments of health is also taken up and analyzed. Special exercises are given at the State Department of Health, by Dr. EUGENE R. KELLEY, and at the Boston Board of Health, by Dr. WILLIAM C. WOODWARD.

311. Social Relations.

Harvard Medical School, one hour per week, second term. Dr. WADE WRIGHT and others.

A series of lectures on the more important phases of the relation of Public Health work to social conditions.

312. Social Service Work. (Optional.)

Massachusetts General Hospital, six hours per week, part of term. Miss IDA C. CANNON and assistants.

Lectures, talks, and demonstrations will be given to show the practical relationship between the work of the social service worker and the public health worker. Clinics will also be given in those diseases which are of particular interest to students in public health.

LABORATORY COURSES**411. Laboratory Technique.**

Harvard University, six hours per week, first term. Mr. MELVILLE C. WHIPPLE.

The purpose of this course is to give training in the fundamentals of laboratory methods, both bacteriological and chemical. The work includes the use of the chemical balance, the preparation and standardization of reagents, quantitative analysis, the use of the microscope, the preparation of culture media, the use of incubators and the equipment of laboratories.

412. Wasserman Laboratory Work. (Optional.)

Harvard Medical School, six hours per week, first term. Dr. HINTON.

The work in this course includes lectures, demonstrations, and actual laboratory work. It is designed to give the student a general knowledge of and training in the Wasserman technique.

413. Elementary and General Bacteriology. (Optional.)

Harvard Medical School, daily except Saturday during October and November, from 2 to 5.30 P.M. Professors ERNST, WOLBACH, and others.

414. Bacteriology. (Optional.)

M. I. T., six hours per week, first term; five hours per week, second term; four hours per week, third term. Professor PRESCOTT and Dr. HORWOOD.

First term, General Bacteriology. The second and third terms are devoted to the bacteriology of water and foods, and to special problems of sanitary significance.

415. Anatomy and Histology. (Required of non-medical students.)

M. I. T., eight hours per week, first term; seven hours per week, second and third terms. Professor BIGELOW.

A course designed to give the student a grasp of the structure of the vertebrates, and a sufficient knowledge of mammalian (including human) anatomy to form a sound basis for subsequent study of physiology, pathology, and personal hygiene.

416. Analysis of Water, Sewage and Air. (Optional.)

M. I. T., four hours per week, third term. Professor WOODMAN and Mr. WAREHAM.

The chemical examination of potable water, of sewage and of air, with discussions of methods of analysis and the sanitary significance of results.

417. Bio-Chemistry. (Optional.)

M. I. T., three hours per week, first term. Professor MUELLER.

Conferences and reading on the most important phases of Biological Chemistry. The chemistry of plant and animal life and of the metabolic processes. Physico-chemical topics such as osmotic pressure, adsorption, diffusion and colloidal chemistry, bacterial metabolism, toxins, ptomaines, etc., are considered.

418. Public Health Laboratory Methods. (Required.)

M. I. T., six hours per week, second and third terms. Dr. SLACK.

Training is given in the cultural diagnosis of diphtheria, examination of specimens for tuberculosis, the Widal reaction in typhoid fever, the microscopical diagnosis of malaria, the complement fixation test, etc.

419-420. Physiology. (Required of non-medical students.)

M. I. T., four hours per week, first and second terms; eight hours per week, third term.

421. Food Analysis. (Optional.)

M. I. T., five hours per week, second term. Professor WOODMAN.

Lectures and laboratory work dealing with the character, purity, and nutritive value of common food materials and with food adulteration.

422. Hygienic Laboratory Methods. (Optional.)

State Antitoxin, Vaccine and Wassermann Laboratory. Dr. WHITE and assistants.

423. Sanitary Chemistry and Biology. (Optional.)

Harvard University, Cambridge, nine hours per week, first term.
Mr. MELVILLE C. WHIPPLE.

This is a thorough course in water and sewage analysis, and in the analysis of air.

424. Bacteriology. (Optional.)

Harvard University, Cambridge, nine hours per week, second term.
Mr. MELVILLE C. WHIPPLE.

A course in elementary bacteriology.

425. Pathology. (Required of non-medical students.)

Harvard Medical School, twenty-four hours per week, first term.
Dr. COUNCILMAN and assistants.

426. Veterinary Bacteriology. (Provisional Course.)

M. I. T., two hours per week, second and third terms (evenings).
Dr. HORWOOD and assistants.

COMMUNICABLE DISEASES

610. Communicable Diseases. — Clinical Course. (Required.)

South Department, Boston City Hospital, 745 Massachusetts Ave.,
Three hours per week second term. Dr. PLACE.

This course offers an opportunity for the detailed study of the more common contagious diseases, more especially measles, scarlet fever, diphtheria, whooping cough, etc. Their recognition, variation, complications, manner of spread and treatment will be studied at the bedside and in short conferences after the ward visits.

611. Communicable Diseases. — Internship.

South Department, Boston City Hospital, 745 Massachusetts Ave.
one to four months, as arranged by agreement.

For qualified students registered in the School of Public Health.

612. Biology of Disease. (Required of non-medical students.)

M. I. T., two hours per week, second and third terms. Dr. SLACK.

This course deals with the fundamental biological facts of infection, resistance, and immunity. It also deals specifically with the biological characteristics of infectious diseases of special interest to the sanitarian.

613. *Parasitology.* (Optional.)

M. I. T., three hours per week, second term. Professor BIGELOW.

A course on parasitism and parasites with special reference to the forms most often met with in the important parasitic diseases of men and domestic animals.

SANITARY AND MUNICIPAL ENGINEERING

710. *Sanitary Engineering.* (Required.)

Harvard University, Cambridge, three exercises a week, first term, nine hours, second term. Professor WHIPPLE and assistants.

A comprehensive course in sanitary engineering.

711. *Municipal Sanitation.* (Optional.)

M. I. T., three hours per week, second and third terms. Dr. HORWOOD.

The topics considered will include city planning, housing, fire prevention, street paving, public water supplies and water purification, the pollution of streams, methods of sewage disposal, garbage disposal, street cleaning, hygienic housing, plumbing, ventilation, the effect of insanitary conditions on the public health.

712. *Research in Sanitation.* (Harvard University, Hygiene and Sanitation, 20a.)

Professor WHIPPLE.

Opportunities are offered for properly qualified students to undertake research work in the Sanitary Engineering Laboratories of the Harvard Engineering School.

DEMOGRAPHY

810. *Vital Statistics.* (Required.)

Harvard University, Cambridge, six hours per week, first term. Professor WHIPPLE and assistants.

A course in vital, social, and sanitary statistics arranged especially for students who intend to enter the public health service. It will treat of the principles of statistics, population, registration, births and marriages, general death rates, specific death rates, morbidity, causes of death, preparation of tables, plotting, construction of diagrams, graphical display of data, and, in general, the application of statistics to state and municipal problems.

Text-book. Whipple's "Vital Statistics."

811. Research in Demography.

Harvard University, Cambridge, during the second term on dates to be arranged. Professor WHIPPLE and assistants.

For students registered in the School of Public Health.

812. Vital Statistics. (Optional.)

M. I. T., three hours per week, first term.

FIVE O'CLOCK LECTURES

The usual hour for the following lectures is from five to six o'clock. The dates and places will be announced. All students are expected to attend.

In the last series the following lectures were given:

| | | |
|------------------------------|----------------------------|----|
| Infant Mortality | Professor JOHN L. MORSE | 2 |
| Medical Inspection of Aliens | Dr. M. V. SAFFORD | 1 |
| Municipal Sanitation | Dr. C. V. CHAPIN | 2 |
| Ocular Hygiene | Dr. F. H. VERHOEFF | 1 |
| Tuberculosis | Dr. J. B. HAWES, 2d | 6 |
| Posture and Deformities | Dr. F. R. OBER | 2 |
| Sanitary Law | Professor EUGENE WAMBAUGH | 11 |
| Personal Hygiene | Professor WALTER B. CANNON | 6 |

CUTTER LECTURES ON PREVENTIVE MEDICINE

These lectures are given annually under the terms of a bequest from JOHN CLARENCE CUTTER. During the past year 1920-21 the following lectures were given:

THEOBOLD SMITH, M.D., LL.D., S.D., Director, Department of Animal Pathology, The Rockefeller Institute for Medical Research.

Subject: Medical Research and the Conservation of Food-Producing Animals.

Professor JULES BORDET, Director of the Pasteur Institute of Brussels.

Subject: Anaphylaxis.

ALONZO TAYLOR, M.D., Professor of Physiological Chemistry, University of Pennsylvania School of Medicine.

Subject: General and Specific Effects of Prolonged Subnutrition.

COURSES IN INDUSTRIAL HYGIENE

In addition to the courses described in this catalogue, important courses in Industrial Hygiene, given at Harvard Medical School, are open to students in the School of Public Health.

Description of these courses may be found in a special catalogue published by the Committee on Industrial Hygiene, and to be obtained from Miss FLORENCE CROWELL, Registrar, Harvard Medical School, 240 Longwood Ave., Boston, Mass.

| | |
|----------------------------------|---------------------|
| Methods of Air Analysis | Mr. PHILIP DRINKER |
| Industrial Toxicology | Dr. ALICE HAMILTON |
| Industrial Health Administration | Dr. W. I. CLARK |
| Industrial Surgery | Dr. F. J. COTTON |
| Nutrition | Dr. ALICE F. BLOOD |
| Industrial Psychiatry | Dr. STANLEY COBB |
| Industrial Medicine | Dr. D. I. EDSALL |
| Applied Physiology | Dr. C. K. DRINKER |
| Röntgenology | Dr. S. W. ELLSWORTH |

SPECIAL COURSES IN PUBLIC HEALTH TEACHING

There will be offered during the year special courses dealing with the teaching of Hygiene and Public Health in the public schools. These courses will be open to Public Health Nurses, Normal School Graduates, and Graduates of Schools of Physical Education who have had the equivalent of a High School training in addition to their professional work.

These students will not be candidates for the Certificate in Public Health but will be given a statement from the School testifying to the satisfactory completion of the work accomplished.

A detailed statement of these courses will be issued at a later date. Inquiries regarding these courses should be addressed to Professor C. E. TURNER, Massachusetts Institute of Technology, Cambridge, Mass.

STUDENTS 1920-21

| | |
|---|--------------------------------------|
| Baylis, Maj. James Ernest, S.B., M.D. | Med. Corps, U. S. Army. |
| Bell, Charles Edward, S.B. | 1647 Beacon Street, Boston, Mass. |
| Berger, Henry Ehlen, Jr., A.B. | 12 Appleby Road, Wellesley, Mass. |
| Britto, Charles Edward, M.D. | Stockton Springs, Maine. |
| Brown, Bertha M., S.B. | 76 Center Street, Dorchester, Mass. |
| Burke, Arthur E., S.B. | Keene, N. H. |
| Calazans, Sebastiao de Comargo, M.D. | Sao Paulo, Brazil. |
| Campbell, Elmer Wilmot, S.B. | Ashland, Maine. |
| Campbell, Roy Jones, A.B. | Sabattus, Maine. |
| Dasek, Vaclav, Eng. | Zizkov, Czechoslovakia. |
| Fordham, George, M.D. | 706 Huntington Ave., Boston, Mass. |
| Foster, Lt.-Col. Charles L., S.B., M.D. | Med. Corps, U. S. Army. |
| Granillo, Ricardo, M.D. | Puebla City, Mexico. |
| Hitchcock, Harry Eastman, M.D. | Auburn, Maine. |
| Hume, Maj. Edgar Erskine, A.B., M.D. | Med. Corps, U. S. Army. |
| Jones, Catherine Dewey, A.B. | Billerica, Mass. |
| Lawrence, William Fuller, A.B. | 135 Highland Street, Brockton, Mass. |
| Lull, Maj. George F., M.D. | Med. Corps, U. S. Army. |
| Meredith, Florence Lyndon, M.D. | Philadelphia, Pa. |
| Mujica-Dueno, Ogustin, M.D. | Juncos, Porto Rico. |
| Netusil, Francis Taroslav, M.D. | Prague, Czechoslovakia. |
| Pickett, William Henry, M.D. | White Springs, Florida. |
| Pierce, Dorothy Ruth, A.B. | 37 Norwood Street, Greenfield, Mass. |
| Prommas, Chalerm, M.D. | Bangkok, Siam. |
| Richardson, Francis Allen, M.D. | 77 Appleton Street, Boston, Mass. |
| Songkla, Prince of, Mahidol of Siam, | Bangkok, Siam. |
| Vardon, Arnold Carapiet, M.D. | Mymensingh, East Bengal. |
| Vesely, Josef Francis, M.D. | Prague, Czechoslovakia. |

STUDENTS IN INDUSTRIAL HYGIENE, 1920-21

| | |
|----------------------------------|----------------------|
| Asano, Tatsuya, M.D. | Tokyo, Japan |
| Boyd, James Van Wagner, M.D. | Longmeadow, Mass. |
| Brannick, Catherine, A.B., M.D. | Allston, Mass. |
| Frankfurter, Marion Denman, A.B. | Boston, Mass. |
| Harrington, Mary E. | Boston, Mass. |
| Lewis, J. F., M.D. | |
| Rice, Marion McCune, A.B. | Brattleboro, Vt. |
| Richardson, Anna G., M.D. | Boston, Mass. |
| Richardson, Francis Allen, M.D. | Boston, Mass. |
| Smith, Dorothy Eggleston, | Princeton, N. J. |
| Tennant, Mary Elizabeth, A.B. | Cripple Creek, Colo. |

REGISTER OF GRADUATES

- Allen, Andrew Foster, S.B. Campello, Mass.
 C.P.H. 1915. Assistant Health Officer, County and City Board of Health, Tuscaloosa, Ala., 1916-17.
 Scientific Assistant, U. S. Public Health Service, 1917-19.
 Assistant Sanitary Engineer, United States Public Health Service, 1919-20.
 Associate Sanitary Engineer, United States Public Health Service, 1920-.
- Boyd, Mark Frederick, M.D., M.S. Galveston, Texas.
 C.P.H. 1914. Associate Professor of Preventive Medicine and Hygiene, University of Iowa, 1915-17. Epidemiologist, Iowa State Board of Health, 1915-17.
 Professor of Bacteriology and Preventive Medicine, Medical Department, University of Texas, 1917-21.
 Field Service, International Health Board, 1921-.
- Brown, Walter Henry, M.D. Paris, France.
 C.P.H. 1915. Epidemiologist, Massachusetts State Department of Health, 1915-16. Director of Child Welfare Department, Connecticut State Council of Defense.
 Member, Public Health Council, Connecticut State Department of Health. Health Officer, Bridgeport, Conn., 1916-20.
 Associate Director, Dept. of Health Service, American Red Cross, 1920-21.
 Asst. Medical Director, Commission for the Prevention of Tuberculosis in France, 1921.
- Brown, William Eustis, Ph.B., M.D. Peter Bent Brigham Hospital, Boston, Mass.
 C.P.H. 1915. Health Officer, York, Maine, 1915-16. Instructor, School of Public Health, 1915-18.
 Student Harvard Medical School, 1916-20. M.D. 1920.
 Surgical House Officer, Peter Bent Brigham Hospital, 1920-.
- Champion, Merrill Edwin, A.B., M.D. 545 State House, Boston.
 C.P.H. 1914. Assistant Director, Hookworm Commission (Rockefeller Sanitary Commission) North Carolina State Board of Health, 1914-15. District Health Officer, Mass. State Department of Health, 1915-18.
 Director, Division of Hygiene, Massachusetts State Department of Public Health, 1918-.

- Ciampolini, Ettore, M.D. New Haven, Conn.
C.P.H. 1920.
Medical Director, New Haven Health Centre, 1920-.
- Cole, Ralph Waldo Emerson, M.D. Charleston, W. Va.
C.P.H. 1915. Health Officer, York, Maine, 1915-16. Epidemiologist and Acting Health Officer, Health Department, Akron, Ohio, 1916-18.
Epidemiologist, State Department of Health of West Virginia, 1918-19.
- Cornelius, Albert Franklin, M.D. San Antonio, Texas.
C.P.H. 1915. Sanitary Inspector, American Red Cross Sanitary Commission in Serbia, 1915-16. Physician and Sanitarian for Berea College, Berea, Ky., 1916-17.
Acting Assistant Surgeon, U. S. P. H. Service, 1917-.
Director, San Antonio City Clinic for Venereal Diseases, 1920-.
- Drury, Herbert, M.D., C.M. Rosenthal, Canada.
C.P.H. 1917. Medical Officer and Bacteriologist, William Head Quarantine, Canada, 1917-18.
Graduate Student, Yale University, 1919-20.
- Fales, William Thurber, S.B. Baltimore, Md.
C.P.H. 1920. Instructor in Epidemiology, School of Hygiene and Public Health, Johns Hopkins University, 1920-.
- Gigger, Augustus George, M.D., Ph.G. City Hall, Syracuse, N. Y.
C.P.H. 1917. Assistant Pathologist, State Board of Health, Rhode Island, 1917-18.
City Bacteriologist. Director, Bureau of Laboratories, Syracuse, N. Y., 1918-.
- Gunn, Selskar Michael, S.B. International Health Board, 61 Broadway, N. Y.
C.P.H. 1917. Instructor, Assistant Professor, Associate Professor of Sanitary Biology and Public Health, Massachusetts Institute of Technology, 1910-17.
Associate Director, American Tuberculosis Commission in France, 1917-20. Captain, American Red Cross, 1917-20.
Adviser in Public Health Administration, Ministry of Health, Prague, Czechoslovakia, 1920-.
- Harmon, Gaius Elijah, M.B., M.D. 1353 E. 9th St., Cleveland, Ohio.
C.P.H. 1914. Assistant Professor in Hygiene and Bacteriology, School of Medicine, Western Reserve University, 1914-.

- Hedrich, Arthur William, S.B. 370 Seventh Ave., New York City.
 C.P.H. 1919. Editor, American Journal of Public Health, 1917-.
 Secretary, American Public Health Association, 1917-.
- Henry, Jonathan Edwards, M.D. Boston, Mass.
 C.P.H. 1920. Epidemiologist, Massachusetts State Department of Public Health, 1920-21.
- Holt, William Leland, A.B., M.D. Univ. of Tenn., Knoxville, Tenn.
 C.P.H. 1914. Health Officer, South Orange Township, N. J., 1915-16. Assistant Bacteriologist to State Department of Health, N. Y., 1917. Instructor in Bacteriology and Hygiene, School of Medicine, Western Reserve University, 1917-18. Acting Chief of the Bureau of Laboratories, City Health Department, Cleveland, O., 1917-18.
 Health Officer, Beloit, Wis., 1918-19.
 Deputy Health Officer, County Health Dept., Los Angeles, Cal., 1919-20.
 Director, Dept. of Hygiene, University of Tennessee, 1920-.
- Hoyt, Robert Nelson, S.B. Augusta, Ga.
 C.P.H. 1920. Acting Bacteriologist, Boston City Health Department, 1920.
 Instructor in Preventive Medicine and Director of Public Health Laboratories, Medical Department, University of Georgia, 1920-.
- Hsieh, En Tseng, M.D., Dr. P. H. Peking, China.
 C.P.H. 1916. Graduate Student, University of Pennsylvania Medical School, 1916-17.
 Peking Union Medical College, Peking, China.
- Ingham, Edward Alexander, S.B.*
 C.P.H. 1916. State Health Officer, Southern District of California, 1917-18.
- James, Linda, A.B. 1072 Ashland Ave., St. Paul, Minn.
 C.P.H. 1917. Organizer of After-Care Division, Harvard Infantile Paralysis Commission, March to July, 1917. Executive Secretary, Harvard Infantile Paralysis Commission, July, 1917-Feb., 1918. Industrial Health Inspector, Massachusetts State Board of Labor and Industries, 1918.
 Carnegie Americanization Study, 1918-19.
 Field Secretary, Minnesota Public Health Association, 1919-20-21.
 Acting Executive Secretary, Minnesota Public Health Association, 1920-21.

* Died, December, 1918.

- Knowlton, Millard, M.D. Raleigh, N. C.
C.P.H. 1918.
Captain, Medical Corps, U. S. A., 1918-19.
Chief, Bureau of Venereal Diseases, Kansas State Board of Health,
1918-19.
P. A. Surgeon (R) United States Public Health Service, 1919-.
Director, Bureau of Venereal Diseases, No. Carolina State Board of
Health, 1919-.
- Lederer, Arthur, Chem. Eng., M.D. Chicago, Ill.
C.P.H. 1917.
P. A. Surgeon (R) United States Public Health Service Hospital
No. 32. Chicago, Ill.
- McCormick, John Joseph, M.D. Washington, D. C.
C.P.H. 1917. Epidemiologist, Health Department, City of Jack-
son, Mich.
Medical Corps, U. S. A., 1918-19.
United States Public Health Service, 1919.
Medical Corps, U. S. Army, 1920-.
- McDonald, William Joseph, A.B., M.D. Iowa City, Iowa.
C.P.H. 1915. Laboratory and Research Director of Leprosy, Peni-
kese Island, Mass., 1916-17.
Major, Medical Corps, U. S. A., 1917-19.
Director, Dept. of Student Health, State University of Iowa, 1919-.
- McWhirk, Clara Viola, S.B.
C.P.H. 1920. Bacteriologist, University Public Health Labora-
tories, Toledo, Ohio, 1920-.
- Mitchell, Harold Hubbard, S.B., M.D. 105 E. 22d St., New York
City.
C.P.H. 1916. Sanitary Inspector, American Red Cross Sanitary
Commission in Serbia, 1915. Epidemiologist, Indiana State
Board of Health, 1916-17.
First Lieutenant, M. R. C., U. S. Army, 1917-.
Special Agent, Health, National Child Labor Committee, 1919-.
- Neagle, Harry Benjamin, A.B., M.D. Jackson, Mich.
C.P.H. 1914. Professor of Preventive Medicine, Harvard Medical
School, China.
Health Officer and Director of Hospitals, Jackson, Mich.

- Osborn, Stanley Hart, M.D. 12 Vineland Terrace, Hartford, Conn.
 C.P.H. 1915. Sanitary Inspector, American Red Cross Sanitary Commission in Serbia, 1915-16. District Health Officer, Mass. State Department of Health, 1916-17. Epidemiologist, Mass. State Department of Health, 1917-20.
 Medical Corps, U. S. A., American Expeditionary Force, 1918-19. Director, Bureau of Preventable Diseases, Deputy State Commissioner of Health, Connecticut State Department of Health, 1920-.
- Paul, George Philip, M.D. Round Lake, N. Y.
 C.P.H. 1916. Medical Officer in Charge, International Health Commission, Suva, Navua, Fiji Islands, 1917-18.
 Captain, Medical Corps, U. S. Army, 1918-19.
 International Health Board, Australia and Madras, India, 1919-21.
- Peebles, Harold Everett, S.B., S.M. Iowa State College, Iowa City, Iowa.
 C.P.H. 1920. Assistant Professor of Hygiene and Public Health, Iowa State College, 1920-.
- Pelc, Hynek, M.D. Smichov, Czecho-Slovakia.
 C.P.H. 1920.
 Assistant to the Technical Adviser, Ministry of Public Health, Czecho-Slovakia, 1920-.
- Peter, William Wesley, Ph.B., Ph.M., M.D. 4 Quinsan Gardens, Shanghai, China.
 C.P.H. 1918.
 Medical Officer, Y. M. C. A., Paris, France.
 Joint Council on Public Health Education in China, 1920-.
- Platt, Philip Skinner, A.B., A.M. 578 Grand Ave., New Haven, Conn.
 C.P.H. 1920. Director, New Haven Health Centre, 1920-.
- Pope, Alton Stackpole, A.B. Waterville, Maine.
 C.P.H. 1920. District Health Officer, Maine State Department of Health, 1920-.
- Pratt, Aaron Paul, A.B. Brighton, Mass.
 C.P.H. 1916. Assistant in Hygiene, Harvard College, 1916. Health Officer, Town of York, Maine, 1916-17. Second Lieutenant, Sanitary Corps, U. S. Army, 1918-19. District Health Officer, Maine State Department of Health, 1917-18, 1919-.
 Assistant Secretary, Harvard-Technology School of Public Health, 1919-.

- Robins, Vernon, M.D. Louisville, Ky.
C.P.H. 1917. Field Director of Sanitation, State Department of Health of Alabama, 1917-18.
City Bacteriologist and Chemist, City Health Department, Louisville, Ky.
- Rohn, Minna Mary, M.D. Bolton Landing, N. Y.
C.P.H. 1918.
Health Officer, Lake George Health District, 1918-21.
- Samper, Bernardo, A.B., M.D. Bogotá, Colombia, South America.
C.P.H. 1916.
- Scannell, Edward John, M.D. Trinidad, Colorado.
C.P.H. 1918.
Medical Corps, U. S. Army, 1918-19.
Superintendent, Medical Department, United Fruit Company, Preston, Oriente, Cuba, 1920-21.
- Steelsmith, Daniel Clarence, M.D. Dubuque, Iowa.
C.P.H. 1917. Health Officer, County and City Board of Health, Tuscaloosa, Ala., 1917-18.
Health Commissioner of Iowa City, University of Iowa, 1918-19.
Health Officer, Columbus, Ga., 1919-20.
United States Public Health Service, City and County Health Work, 1920-.
- Tenney, Elmer Seth, B.L., M.D. Camp Lewis, American Lake, Washington.
C.P.H. 1917. Commissioner, Department of Health, State of Nebraska, 1917-18. Major, M. C., U. S. Army, 1917-.
- Turner, Clair Elsmere, A.B., A.M. M. I. T., Cambridge, Mass.
C.P.H. 1918. Sanitary Engineer, District No. 1, U. S. Public Health Service, 1918-.
Assistant Professor of Hygiene, Tufts College Medical School, 1919-.
Assistant Professor of Biology and Public Health, Massachusetts Institute of Technology, 1919-.
- Wild, William Francis, M.D. St. Paul, Minn.
C.P.H. 1920. Director, County Health Work, Coahoma County, Mississippi, 1920-21.
Executive Secretary, Minnesota Public Health Association, 1921-.

- Wilmot, Frank A., A.B., M.D. Bethany, Nebr.
C.P.H. 1917. Surgeon and Sanitarian to Dennison Manufacturing Co. Framingham, Mass., 1917. Captain, M. C. U. S. Army, 1918.
Instructor in Military Hygiene and Sanitation Medical Officers Training Camp, Camp Greenleaf, Chickamauga Park, Ga., 1918.
- Wilson, Arthur, M.D. Saskatoon, Saskatchewan, Canada.
C.P.H. 1920. Health Officer, Saskatoon.
- Woo, Sien Ming, A.B., M.D. Shanghai, China.
C.P.H. 1916.
Associate Secretary, Joint Council on Public Health Education in China, 1917-.
- Yen, Fu Chun, M.D. Changsha, Hunan, China.
C.P.H. 1917.
Hunan-Yale Medical School, Changsha, China.
- Zentmire, Zelma, S.B., S.M. Iowa City, Iowa.
C.P.H. 1920. Technician, Memorial Hospital, Richmond, Virginia, 1920. Serologist in Charge of Laboratories, Division of Venereal Disease Control, Iowa State Board of Health.

GRADUATES IN INDUSTRIAL HYGIENE

- Coon, Marion, M.D. Boston, Mass.
Crain, Rufus Baker, M.D. Richfield Springs, N. Y.

FORMER SPECIAL STUDENTS

- Abele, Charles Arthur, Ch.E., S.B.
 Adams, Helen C., R.N.
 Akerley, Arthur William Kenah,
 M.D., C.M.
 Allen, J. Berton, M.D.
 Anderson, Anna M.
 Atwood, Catherine, A.B.
 Baker, Amy B., A.B.
 Bartlett, Leslie Raymond.
 Batt, Louise M., A.B.
 Bennett, Arthur King, M.D.
 Bonnier, Joseph Wilfred, B.M.,
 M.D., D.P.H.
 Bradley, John Ruskin, M.D.
 Bradley, Rosamund.
 Bristol, Gertrude R., A.B.
 Burlingame, Frances M., A.B.
 Capen, Ruth G., A.B.
 Chisholm, Alva N.
 Coolidge, Isabel.
 Coolidge, Julia S.
 Daniels, Marian, A.B.
 Davis, Anna J., S.B.
 Dean, Miriam I., A.B.
 Dellenbaugh, Anne Goddard, A.B.
 Dewire, Marjorie.
 Eichorn, Gretchen.
 Fernald, Ethel, A.B.
 Foley, Frederic Joseph, A.B.
 Fuller, Rhea Ruth, A.B.
 Furber, Jane M., A.B.
 Greenman, Raymond Henshaw.
 Gwinn, Van Henry, M.D.
 Hagerty, Joseph James, M.D.
 Hale, Amy E.
 Hale, Annie P.
 Harkness, Robert Rae, Ph.B.
 Hart, Clarence Dunbar, S.B.
 Hatch, Ruth E., A.B.
 Hawley, Ethel R.
 Holloway, Howard Steele, M.D.
 Horan, Charles F.
 Horel, Ruth Frances, A.B., A.M.
 Horwood, Murray Philip S.B.,
 S.M.
 Hunt, Frank S., S.B.
 Hurwitz, Simon, M.D.
 Jardein, Janette G., A.B.
 Jordan, C. Louise.
 Kennedy, Harris, A.B., M.D.
 Knight, Herbert Wilcox, M.D.
 Knobel, Edward, M.D.V.
 Kuo, Yang Mo.
 Landry, James Maguire Anthony,
 A.B., A.M.
 Lauder, Mildred, A.B.
 Lewis, Janet K., A.B.
 Little, Harold Greenleaf, S.B.
 Lord, Helen.
 Mackler, Max Joseph, Pharm.D.,
 Ph.C.
 Mendelson, Ralph Waldo Emerson,
 M.D.
 Morris, Harry Rembert, A.B.,
 M.D.
 Nelson, John Brockway, S.B.
 Nichols, Hope.
 Ohrt, Frederick, C.E.
 Packard, Charles Earl, A.B.
 Payson, Hazel, S.B.
 Pickels, Esther E., A.B.
 Pierce, Louise V.
 Powers, John H.
 Pratt, William Porter, M.D.
 Proctor, Harriet T., A.B.
 Ratcliffe, Alice Ruth.
 Robinson, Mrs. Alexander C.
 Saville, Charles, S.B.
 Simon, Isaac Barney, S.B.
 Sindler, Bessie, A.B.

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| Smith, Ruth M., S.B. | Townsend, Myron, S.B. |
| Stevens, Caroline, A.B. | Vieira, F. B., M.D. |
| Stickney, Mrs. S. C. | Wallace, Mary A., R.N. |
| Stuart, Edward, S.B. | Weinstein, Jeannette Dorothy, S.B. |
| Sun, S. K. | Whaley, Mrs. W. B. |
| Swaine, Edith. | Whitney, Elsie E., A.B. |
| Swan, Horace C., M.D. | Willey, A: G., A.B. |
| Taylor, Marion F., A.B. | Wilson, Mildred Ernestine. |
| Taylor, Martha, A.B. | Wood, Margery (see Robinson). |
| Tayntor, Lewis Olds, Ph.C. | Wylde, Russell Arthur, A.B. |

FORMER STUDENTS IN INDUSTRIAL HYGIENE

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| Bernard, Zdenek, M.D. | Shaw, Louis A. |
| Doherty, Helen I., M.D. | Shorey, Marion Lydia, Ph.B., A.M., Ph.D. |
| Field, Leonor Alberta, A.B. | Smith, Jessie Idell, A.B. |
| Fuller, Rhea Ruth. | Stevens, Harold Wentworth, M.D. |
| Minot, Annie Stone, A.B. | Thacher, Catherine. |
| Pease, Charles Wood, M.D. | Walkley, William Samuel, M.D. |
| Reiman, Harriet A. | Wright, Lucy, A.B. |

FORMER STUDENTS IN VETERINARY BACTERIOLOGY

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| Campbell, Edward C., V.M.D. | Riedel, Philip Henry, M.D.V. |
| Eames, Harold Nelson, V.M.D. | Ryan, Edward Thomas, V.M.D. |
| Freneh, Arthur Edson, D.V.M. | Shannon, William Herbert, V.M.D. |
| Hennessey, William James, V.S. | Smith, Frank Holden, V.M.D. |
| Howard, Lester Heard, D.V.S. | Sturges, Frank Perley, V.S. |
| Maloney, Thomas E., V.S. | Thayer, Warren L., D.V.S. |
| de Varennes, Edward A., V.S. | |



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